Title: NEWA (Northeast Weather Association) 2003: A Year in Review

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Type of grant: (not funded in the grants program) Monitoring, forecasting, and economic thresholds

Project location(s): all counties in New York, some in Pennsylvania. Website accessible internationally

Abstract: NEWA maintained the electronic weather network in the 2003 growing season with support from NEWA members and the New York State IPM Program. As a result of the free subscriptions provided by the IPM Program in 2003, NEWA usage rose an additional 7% compared to 2002 when it rose 84% as a result of the first announcement of the free service. The number of people receiving NEWA information is much larger than that measured by web hits since information from NEWA is used in crop updates and Extension newsletters. The National Weather Service provides weather forecasts for the network and continues to provide new forecast products that NEWA makes available on the web site. The Northeast Regional Climate Center continued to provide links to evapotranspiration maps based on data from the cooperative network. In addition, in 2003, the Climate Center provided daily ET information from several of the NEWA sites that are capable of supplying the necessary data needed in the ET calculations and also from sites in the cooperative network. Two loggers were upgraded with wind and solar measurements and that data could be used for evapotranspiration information. One new site was added to the network in 2003 in Tioga County. Degree day forecasts based on weather forecasts were also provided for the first time.

Objectives:

1) Keep the NEWA electronic weather network operational for the 2003 season.
2) Solicit new members for NEWA from among fruit, vegetable, field crop, and other appropriate growers. IPM offers free subscriptions to NEWA in 2003.
3) Expand the cooperative arrangement with the Northeast Regional Climate Center to provide evapotranspiration data from capable sites in the NEWA network.
4) Provide degree day forecast based on National Weather forecasts.

Procedures, Results, and Discussion:

1. KEEP THE NEWA ELECTRONIC WEATHER NETWORK OPERATIONAL.

During the 2003 growing season NEWA was able to successfully maintain and operate the electronic weather network. Server sites in Geneva and Canandaigua gathered weather data daily from 36 data loggers. NEWA continued to provide data from several sites through the winter to provide weather data for Stewart's wilt forecasts for sweet corn in New York. Also

sites are maintained in winter to keep track of low temperatures in vineyards and apple orchards. NEWA assisted Tyrone Hall from Cornell Cooperative Extension in Tioga County in establishing one new instrument site in Catatonk, New York.

The network itself was operational on 100 percent of the days between April 1 and October 31, although individual instruments experienced down time from lightning strikes and other problems. The year 2003 featured abnormally wet and cool conditions and thunderstorm activity continued to cause sporadic problems. Although lightning damaged three installations, the problems were generally remedied within one or two days of occurrence unless damage to the instrument was major, in which case the instruments were returned to the manufacturer for repairs. The data were summarized daily and used to operate pest forecast models for potatoes, onions, apples, grapes, cabbage, sweet corn, and tomatoes. Degree-day accumulations were calculated for different base temperatures using several degree-day models as needed by different client groups. A new site navigation link was also added which allowed users the opportunity to familiarize themselves with the web site.

A new downy mildew model for grapes was implemented under the direction of Bob Seem and Kyu Rang Kim. The model requires temperature, relative humidity, precipitation and leafwetness data. Many of the grape loggers do not measure all these parameters. Data from other loggers was used and growers interested in this model could upgrade their loggers to measure the missing parameter(s). Several upgrades have been done or are being planned as a result. Data from the NEWA server is downloaded and run through the model. This model represents the first interactive type model displayed on the web site. Grower input is required for this model as they must select the cultivar of grape and answer some questions before having a forecast displayed.

A Michigan model to forecast the occurrence of downy mildew in onions was tested again for the second year in 2003. Research is ongoing as to whether it will be applicable in New York. The model is designed to predict at 65 days after planting whether mildew is likely to occur during the remainder of the growing season. This year the model suggested that downy mildew conditions were favorable in some locations in NY but not in Wayne County where downy mildew was identified. A closer look at why this happened and if the model needs to be adjusted for NY conditions will have to be analyzed.

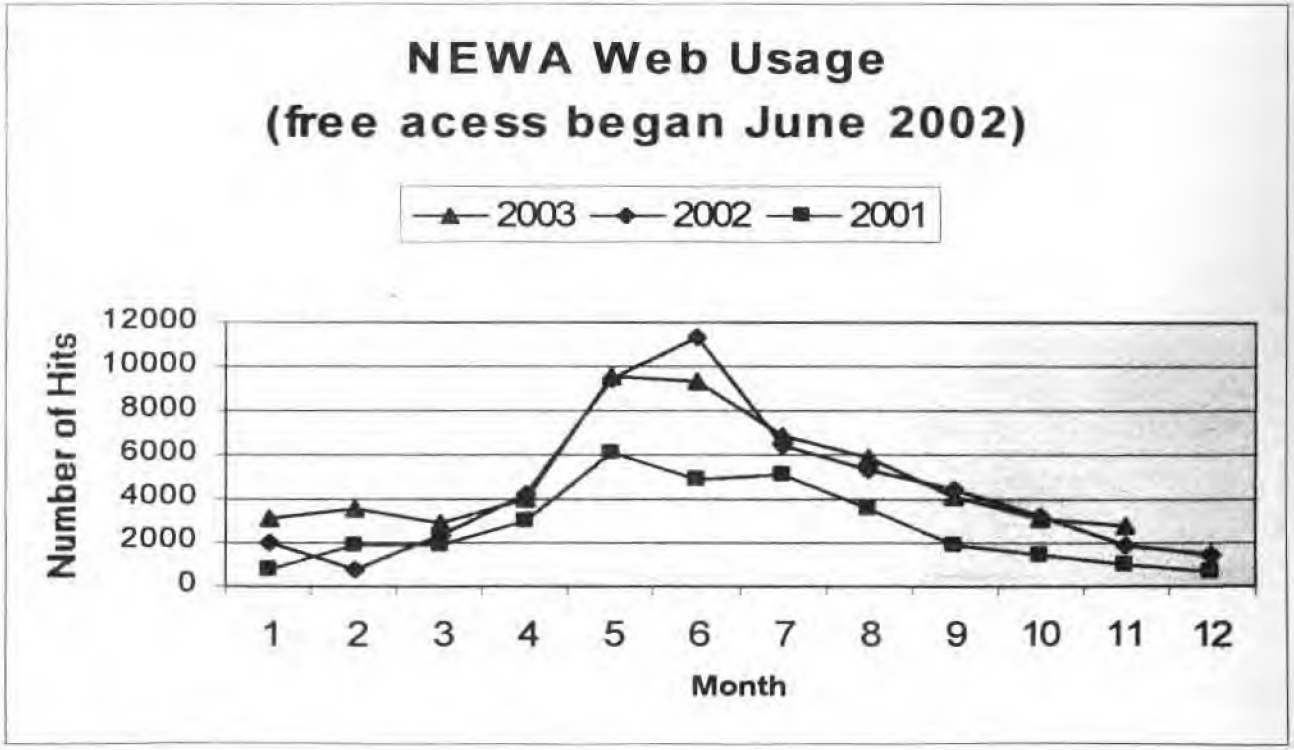
As a result of user input several changes were made to information and model output. Data was removed from daily summaries that represented incomplete days. The onion forecast displays were cleaned up and wording was added to make them clearer for the user. Cabbage maggot degree days were set back to zero when the peak occurred for each generation.

The National Weather Service provides forecast information, radar information and other products that can be useful to growers. Links to new NWS products are added as they become available. One such product added this year was the link to provide forecast information by entering a zip code or location. Entering this information provides forecasts for that site.

and Figure 1 below. NEWA information is also redistributed in several CCE newsletters. Based on a survey conducted in 2000, it is estimated that newsletters with a circulation of over 1,200 farms contain NEWA information on a regular basis.

NEWA Hits	2001	2002	2003
January	791	1960	3131
February	1891	769	3515
March	1860	2330	2933
April	3022	4272	3967
May	6105	9432	9533
*June	4940	11323	9286
July	5082	6472	6934
August	3592	5309	5846
September	1853	4469	4060
October	1428	3240	3104
November	1040	1895	2776
December	636	1420	
Through November	31604	51471	55085

Figure 1: NEWA web access for 2001, 2002 and 2003.IPM



Free NEWA assisted a demonstration project in Ontario, Wayne and Yates Counties highlighting the use of onion disease forecasts and scouting. This was the second year of this project. The demonstration made growers aware of the onion forecasts and the other online pest management resources. Most vegetable, fruit, and field crops growers are becoming more familiar with the internet and more work needs to be done to show growers the full benefit of IPM internet resources.

NEWA personnel set up demonstrations at trade shows and workshops to attract new members. A demonstration of NEWA and a general talk on weather data gathering was conducted at the NYS Direct Marketing Conference under the direction of Rick Reisinger. Growers and Cooperative Extension agents participated in this talk.

The 2003 Onion Council Tour had a short segment highlighting the benefits and features of NEWA. Printouts of the onion disease forecasts and a brochure were distributed and explained at this event.

3) CONTINUE AND EXPAND A COOPERATIVE ARRANGEMENT WITH THE NORTHEAST REGIONAL CLIMATE CENTER.

In 2003 the Northeast Regional Climate Center (NRCC) continued to provide links to evapotranspiration (ET) maps and degree-day maps. The data is compiled through information provided by airport observations and the Cooperative Observer Network. The Climate Center also provided daily ET readings to NEWA and a seasonal log was prepared and displayed on the NEWA web site. The sites were from airport and the cooperative network observations and from sites from the NEWA network that measure the necessary parameters to needed to calculate ET. Two loggers were updated this year with those parameters. One site was in Wayland, Steuben County and the other site will be located in Niagara County. Two existing sites, Freeville and Fredonia were also computed. Due to the late delivery of the weather equipment the Niagara County site will not be installed until 2004. The Climate Center downloaded the weather data from the NEWA site and ran the data through the ET models. The ET information was emailed back to the NEWA server where it was posted.

4) PROVIDE DEGREE DAY FORECAST BASED ON NATIONAL WEATHER FORECASTS

In 2003, NEWA provided degree day forecasts based on information provided by National Weather Service forecasts. These forecasts were provided Monday – Friday and were available by 7AM each morning. Degree day bases of 50, 48, 43, 40 (Fahrenheit) and 4 degree Celsius for cabbage maggot predictions were provided. All stations that were downloaded in the NEWA network were provided with forecasts.

Summary

NEWA maintained the electronic weather network in the 2003 growing season with support from NEWA members and the New York State IPM Program. Growers in part provided use of weather equipment, provided phone lines, and did basic troubleshooting of weather equipment and modems when possible. The second year of free subscriptions provided by the

IPM Program in 2003 had a corresponding increase in NEWA. The number of people receiving NEWA information is much larger than that measured by web hits since information from NEWA is used in crop updates and Extension newsletters. The National Weather Service provides weather forecasts for the network and continues to provide new forecast products that NEWA makes available on the web site. The Northeast Regional Climate Center provided links to evapotranspiration maps based on data from their cooperative network. The Climate Center provided daily ET information from the cooperative Network and several of the NEWA sites that are capable of supplying the necessary data needed in the ET calculations in 2003. Degree day forecasts based on forecasts from the National Weather Service were made available for the first time for stations in the NEWA network.